

# Global Fusion Industry – Made in Germany

## The German Industry on the Way to the Fusion Power Plant

Agenda for Scaling, Investment and Implementation

Action Paper

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### Germany: Leading Location for the World's First Fusion Power Plant

Nuclear fusion is entering industrial deployment worldwide. The record results of the Wendelstein 7-X stellarator at IPP Greifswald (Germany), the demonstration of physical net energy gain (NIF, USA) and more than twelve billion euros of private global investment in fusion companies mark the transition from research to application.

Germany is exceptionally well positioned for this next step. Hardly any other country combines: (1) scientific excellence in magnetic fusion and laser technology. (2) a globally leading industrial base in key technologies such as high-power lasers, optics, precision manufacturing and plant engineering, and (3) several internationally competitive fusion companies in close geographical and technological integration.

The Federal Government has recognised this strategic window of opportunity. The coalition agreement and the Action Plan on Nuclear Fusion set out a clear objective: the world's first fusion power plant is to be built in Germany.

Pro-Fusion – as the voice of the German fusion industry – fully supports this goal.

### Priority Areas for Action

#### **SUPPLY CHAIN AND KEY TECHNOLOGIES**

Germany's existing industrial strength, in magnetic fusion, optics, lasers and power plant engineering, forms the foundation for the industrialisation of fusion. Building on this, targeted public support and risk coverage should be applied in the following key areas:

### Industrial Roadmap: In Three Phases to the First Power Plant

#### **2026–2028: Foundation of Industrialisation**

Industry-led consortia begin their work. Critical key technologies, HTS tape conductors and HTS magnets, high-power lasers, targets, are developed towards series production. Policy-makers create the regulatory framework and secure the financing of the demonstration phase. Fusion moves from research project to industrial deployment.

#### **2028–2032: Demonstrators and Scaling**

Large-scale test facilities come into operation, and production capacities are systematically ramped up. The robust demonstration of stable plasma and fusion performance conditions for net energy gain is achieved.

Fusion is structurally integrated into national power plant and energy strategy. Industrialisation, supply chains and permitting processes interlock.

#### **2032–2038: First Pilot Power Plant**

Fusion pilot power plants are completed and commissioned. Net electricity operation at prototype scale is demonstrated. On this basis, the transition is made to the first-of-a-kind fusion power plant – underpinned by state guarantees, industrial financing and long-term market integration.

- **HTS conductor production:** Large-scale upscaling in Germany, complemented by an industrial park for magnet manufacturing, including a universal coil test facility, located on a navigable waterway.
- **Laser technologies:** Development of production capacities for laser diodes, laser glass, non-linear crystals and high-performance optics – currently produced predominantly in the USA and China.
- **Tritium infrastructure:** Industry-led test infrastructure based on the world-leading KIT tritium laboratory.
- **AI and digital twins:** Opening existing funding programmes to fusion-specific applications; improved industrial access to JUPITER and other supercomputing capacities.

## FINANCING

Pro-Fusion recommends a graduated set of financing instruments that uses public funds in a targeted way as a lever for private investment: grants and equity instruments for early phases, state-backed loan schemes for demonstrators and infrastructure, guarantees to mobilise institutional investors, and milestone-based funding following the proven model of the space and semiconductor industries.

Germany should join the IPCEI on Innovative Nuclear Technologies and strategically open the German Growth Fund for fusion investments.

**The task now is to mobilise capital, enable scaling and secure a leading position.**

## REGULATION

Pro-Fusion supports the successfully initiated joint work between regulators at federal and Länder level and industry. We explicitly welcome the inclusion of fusion facilities in the Radiation Protection Act as an appropriate and innovation-friendly basis.

A tiered, transparent regulatory framework, which is progressively specified during the planning and permitting process, creates investment certainty and regulatory clarity without blocking technological development. Editorial adjustments to standards during ongoing permitting procedures must not trigger an automatic obligation to adapt.

In the longer term, we recommend harmonisation of fusion regulation at European level in order to design scaling, site selection and the subsequent power plant roll-out in an efficient and competitive way.

## STANDARDISATION

Those who set standards shape markets and secure technological leadership. Pro-Fusion is part of the concerted initiative by the Federal Government and industry to secure for Germany the leadership of the ISO sub-committee for fusion technology.

Equally important is the (co-)financing of the active participation of industrial experts in national and international standardisation bodies. Standardisation is not an administrative side issue – it is an industrial policy instrument and the basis for scaling, export capability and market access.

## Partners for a National Project of the Future

Germany has all the prerequisites to realise the world's first fusion power plant – scientific excellence, industrial strength and entrepreneurial dynamism. German industry is already active with technological excellence, industrial depth and all the capabilities needed to succeed in global competition and deploy fusion on a large scale.

Together we can not only ensure that Germany becomes the location of a first fusion power plant, but that it establishes itself permanently as lead market and lead supplier in the global fusion energy economy.

The question is not whether we are ready, but:  
**The train has left the station. Are you on board?**



Find out more about our **project, current developments and opportunities for involvement** on our website or contact us directly for a personal discussion..

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